

## REMARKS

Receipt is acknowledged of the Office Action of October 18, 2005. Claims 7-8, 10-11, and 14-20 are currently pending in the application, Claims 1-6, 9 and 12-13 having been cancelled by the present Response. Claims 1-13 have been rejected in the Office Action. In response to the Examiner's rejection, Applicants amended the Specification and Claims of the present Application and request reconsideration of the rejection, as explained in more detail below.

### *Drawings*

In the Office Action, the Examiner objected to the drawings under 37 CFR 1.83(a) for failure to show the feature of "the rotation shaft of each of the first and second ventilators" being "positioned axially in the same line," recited in the cancelled Claim 2. Applicants cancelled Claim 2, thus canceling the features objected to by the Examiner. Instead of the objected features, Applicants introduced the limitation of the rotating shafts being positioned coaxially with respect to each other. Applicants believe that this claimed feature is shown in Figure 1, where the axis 4a of the first rotation shaft 8 coincides with the axis 4a' of the second rotation shaft 8'.

The Examiner further objected to Figure 6 for not showing curves 2, 3 and 4. Applicants amended Figure 6 to identify curves 2, 3, and 4. A replacement Figure 6 is enclosed.

In response to the Examiner's request to provide flow arrows to clarify where the fluid enters, where it passes and where it exits, Applicants amended Figure 1 by providing the flow arrows. A replacement Figure 1 is enclosed.

Additionally, Figures 1, 3 and 4 were amended to show that Figure 3 represents a partial side view of Figure 1 from point "A", and Figure 4 represents a partial side view of Figure 1 from point "B."

### ***Specification***

Paragraph [0027] has been objected to by the Examiner as containing informalities. Specifically, the Examiner stated: "the specification states that the ventilation blade surfaces of fan motors I and II are in the same direction ... the forward (exhaust) direction. Where is the exhaust direction?" (See Office Action, page 3) Applicants respectfully direct the Examiner's attention to Figure 1 and note that the " $\beta$ " direction is the exhaust direction. The Examiner further instructed Applicants to clarify the portion of the specification stating that "the fan motor I performs regular ventilation from the rear of the rear blade surface, and II performs regular ventilation from the front blade surface." (See Office Action, page 3) Applicants respectfully direct the Examiner's attention to Figure 3, from which a person skilled in the art can understand that when blades 10d of the fan motor I rotate in its counter-clockwise direction  $\alpha$ , within the bounds of the first ventilator, air flows from the front surface the blades to their rear surface (i.e., the surface opposite to the one shown in Figure 3) and then towards the second ventilator. Applicants amended Figure 3 to label the front side of each blade of the fan motor I as 10f and the rear side of each blade as 10r. Applicants also amended the specification to clearly explain the Applicants invention. Air flow arrows added to Figure 1 may further assist the Examiner in understanding the air flow through the fan motor I. More particularly, as the air enters on the intake side vent opening 1a, it is suctioned into the first ventilator rotating away from a side observer (i.e., away from the viewing point of Figure 1), conveyed from the front surface of the blades to the rear surface of the blades, and is then reflected from the rear side 10r

of each blade towards the fan motor II. Further, as may be understood from Figure 4, when blades 10d' of the fan motor II rotate in its counter-clockwise direction  $\alpha$ , the air is exhausted from the front side of the second ventilator (i.e., the side visible in Figure 4). Applicants amended Figure 4 to label the front side of each blade of the fan motor II as 10f' and the rear side of each blade as 10r'. Air flow arrows were added to Figure 1 to further assist in understanding the air flow through the fan motor II. More particularly, the air flowing from the fan motor I is suctioned into the second ventilator rotating toward a side observer (i.e., toward the viewing point of Figure 1), conveyed from the rear surface of the blades to the front surface of the blades, and is then exhausted from the front side of the second ventilator towards the exhaust vent opening 1a'.

Based on the above explanation, Applicants believe that it is clear now that shafts 8 and 8' rotate in the opposite directions. Applicants added circular arrows  $\alpha$  to Figure 1 to further illustrate this point.

In response to the Examiner's objection to paragraphs [0038] and [0041], Applicants amended these paragraphs to indicate the intake opening 1a, exhaust opening 1a', left side 100, right side 100', the front surfaces of the blades 10f and 10f', and the rear surfaces of the blades 10r and 10r'. While it is not entirely clear what the Examiner means by stating that "impellers shown in Figures 3 and 4 obviously induce axial flow," while "it is evident that radial flow, line beta is generated." Applicants would like to clarify that blades 10d of the fan motor I produce an air-flow parallel to the axis 4a, i.e., the axial air flow in the exhaust direction schematically shown in Figure 1 and designated as  $\beta$ . Blades 10d' of the fan motor II pick up this air flow and carry it towards the exhaust opening 1a' of the ventilation device. The "second beta flow below the fan motors" identified by the Examiner is a schematic illustration of the air

flow generated by the lower half of the first and second ventilators, not shown in Figure 1 (only the top portion of Figure 1 is a cross-sectional view of the ventilation device, the bottom portion shows an outside view of the assembly).

The Examiner is encouraged to call the undersigned attorney for the Applicants if any further explanation or an amendment to the specification is deemed necessary.

***Claim Objections***

In the Office Actions, the claim amendment filed on July 18, 2005 was objected to by the Examiner as allegedly introducing a “new matter.” Although Applicants cancelled previously amended Claim 1, they would like to address the Examiner’s objection in order to anticipate any similar objection being made with respect to the newly added Claim 14.

Claim 14 recites limitations of the ventilators comprising “a motor base, with an outer circular wall shaped in a tilted configuration such that a diameter of the outer circular wall of said motor base decreases to the midpoint between the first and second ventilators,” the shape of said motor base creating “a pressure difference such that the pressure is higher near a top of said motor base and is lower near a bottom of said bottom of said motor base.” Support for the above limitations of Claim 14 may be found in Figure 1 of the present Application. As shown in Figure 1, each ventilator includes a motor base 4, 4’, which has a tilted outer circular wall with a diameter decreasing towards the point where bases 4 and 4’ are adjoining each other, i.e., the “midpoint between the first and second ventilators.” Further, as is clear from Figure 1, the volume of air space near the top portion of the circular wall of each motor base 4, 4’ is smaller than the volume of air space near the bottom portion of the circular wall. As is known in physics, if all other variables are held constant, as the volume of air space increases, the air pressure decreases. Based on this known physical principle, the air pressure at the top of the

wall of each motor base 4, 4' is higher than the air pressure at the bottom of the wall of the same motor base.

***Claim Rejections – 35 USC §112***

Claims 1-13 were rejected in the Office Action under 35 USC §112. Applicants amended the specification and claims of the Application and believe that all Claims currently remaining in the Application, i.e. Claims 7-8, 10-11, and 14-20, comply with the requirements of 35 USC §112.

***Claim Rejections – 35 USC §102 and 35 USC §103***

Claims 1, 2, 4, and 5 were rejected in the Office Action under 35 USC §102(b) as allegedly being anticipated by Schuette et al. (U.S. Patent No. 4,098,008). Claim 6 was rejected under 35 USC §102(b) as allegedly being anticipated by Davis (U.S. Patent No. 3,387,769). Claim 3 was rejected under 35 USC §103(a) as allegedly being unpatentable over Schuette et al., in view of Cobb (U.S. Patent No. 1,968,874) and further in view of Watanabe et al. (U.S. Patent No. 6,158,985). Claims 6-13 were rejected under 35 USC §103(a) as allegedly unpatentable over Takahashi et al. (U.S. Patent No. 5,980,218) and Davis.

Claims 7-8, 10-11, and 14-20 are currently pending in the Application. Claims 14 and 18 are two remaining independent Claims.

Claim 14 is directed to an apparatus for a serial ventilation device having a casing a first ventilator and a second ventilator. The first ventilator is mounted on an air intake opening side of the casing and includes a first rotating shaft and at least one intake blade. Each intake blade has a front surface, facing the air intake opening side, and is mounted on the first rotating shaft. The second ventilator is mounted on an air exhaust opening side of the casing and includes a second rotating shaft and at least one exhaust blade. Each exhaust blade has a front

surface, facing the air exhaust opening side, and is mounted on the second rotating shaft. The first ventilator performs ventilation from a front surface of the intake blade to its rear surface and then towards the second ventilator. The second ventilator performs ventilation from the rear surface of each exhaust blade to its front surface and then towards the exhaust side of the second ventilator. The first rotating shaft is independent from and coaxial to the second rotating shaft. Further, the rotating shafts rotate in opposite directions. Each ventilator further includes a motor base, with an outer circular wall shaped in a tilted configuration such that a diameter of the outer circular wall of the motor base decreases to the midpoint between the first and second ventilators. The shape of the motor bases creates a pressure difference such that the air pressure is higher near a top of each motor base and is lower near a bottom of each motor base.

The prior art of record does not disclose, teach or suggest the present invention as claimed in Claim 14. Specifically, at least the limitations of the first rotating shaft being independent from and coaxial to the second rotating shaft, and the rotating shafts rotating in opposite directions, are not disclosed in the cited prior art. Instead, Schuette discloses a common shaft 50 rotating in the single direction; and Davis discloses three independent shafts 22, 8 and 15 which are not coaxial to each other. Similarly to Schuette, Takahashi discloses a common shaft 3 rotating in a single direction.

Moreover, none of the cited prior art discloses limitations of the independent Claim 14 stating that each ventilator comprises “a motor base, with an outer circular wall shaped in a tilted configuration such that a diameter of the outer circular wall of said motor base decreases to the midpoint between the first and second ventilators,” the shape of said motor base

creating "a pressure difference such that the pressure is higher near a top of said motor base and is lower near a bottom of said bottom of said motor base."

Based on the above, Applicants believe that Claim 14 is patentable over the cited prior art. Further, Applicants respectfully submit that dependent Claims 15-17 are believed to define patentable subject matter in view of their dependency upon allowable Claim 14 and, further, on their own merits.

Claim 18 is directed to an apparatus for a serial ventilation device having a first ventilator and a second ventilator. The first ventilator includes a number of intake blades mounted on a first rotating shaft. The second ventilator includes a number of exhaust blades mounted on a second rotating shaft. The number of exhaust blades is at least one blade fewer than the number of intake blades. The first rotating shaft is independent from and coaxial to the second rotating shaft. Further, the rotating shafts rotate in opposite directions. The first and second ventilators are positioned in series with respect to each other such that they ventilate air along the same line in the same direction.

The prior art of record does not disclose, teach or suggest the present invention as claimed in Claim 18. Specifically, at least the limitations of the first rotating shaft being independent from and coaxial to the second rotating shaft, and the rotating shafts rotating in opposite directions, are not disclosed in the cited prior art. Instead, as described above, Schuette and Takahashi disclose a common shaft rotating in the single direction; and Davis discloses three independent shafts 22, 8 and 15, which are not coaxial to each other.

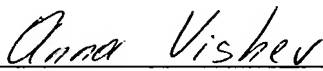
Based on the above, Applicants believe that Claim 18 is patentable over the cited prior art. Further, Applicants respectfully submit that dependent Claims 7-8, 10-11, and 19-20

are believed to define patentable subject matter in view of their dependency upon allowable Claim 18 and, further, on their own merits.

The Examiner is urged to telephone Applicants' undersigned counsel if it will advance the prosecution of this application, or with any suggestion to resolve any condition that would impede allowance. In the event that any extension of time is required, Applicant petitions for that extension of time required to make this response timely. Kindly charge any additional fee, or credit any surplus, to Deposit Account No. 50-0675, Order No. 051319-36.

Respectfully submitted,

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